

Description of Alternative National Projection Series

We have produced three alternative versions of the 2017 National Projections: ‘High Immigration’, ‘Low Immigration’ and ‘Zero Immigration’.¹ Foreign-born migration is arguably the most uncertain of the population change components used to produce our projections, so we have opted to base our alternative projection series on variations. These series will illustrate the sensitivity of the projections, in terms of total population change as well as changes in the composition of the population, to variation in the foreign-born immigration component.²

Methodology³

We developed the alternative series by manipulating the level of foreign-born immigration. No changes were made to the foreign-born emigration rates for these series, nor were changes made to projections of the net native-born migration, which includes migration between the U.S. and Puerto Rico as well as migration of the native born. The main series fertility and mortality inputs were also used to develop these alternative series.

The high foreign-born immigration inputs were created by increasing the main series foreign-born immigration projections by 50 percent.

The low foreign-born immigration inputs were created to be log symmetrical to the high immigration series. It is important to use log symmetry because the low series can only vary between the main series value and 0, whereas, the high series can vary between the main series value and infinity. For example, if we doubled the main series for the high series and reduced the main series values by the same amount for the low series, then the low series would be 0 across the time series. Making them log symmetrical allows the low series to approach 0 as the high series approaches infinity.

To calculate the low series, we:

- 1) take the log of the main and high series
- 2) subtract the main series log value from the high series log value
- 3) subtract that difference from the main series log value
- 4) reverse the log transformation

The zero immigration inputs were created by setting all foreign-born immigration values to 0.

Each projection scenario was processed with the same code used to produce the main series; the exception being that the alternative foreign-born immigration files were referenced for each version rather than the main series file.

¹ The zero immigration series is useful in analyzing the overall impact of foreign-born immigration on the size and composition of the U.S. population. This series is provided for analytical purposes only and does not indicate that foreign-born immigration has dropped to zero or that it is expected to fall to zero.

² Alternative series should not be viewed as an attempt to place a range of uncertainty around the projections. As Smith, Tayman, and Swanson noted in their book, *State and Local Population Projections*, “There is no uncertainty involved in producing illustrative population projections” (2001).

³ For more information on the general methodology used to create the projections see:

<https://www2.census.gov/programs-surveys/popproj/technical-documentation/methodology/methodstatement17.pdf>